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Operating Manual SW31K

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For more information and help about this product please scan the QR-Code or choose the following link: SW31K

Operating manual, Quick guide, Datasheet, Connection diagram, CAD Data
Firmwareupdates, FAQ, Videos about installation and settings, Certificates

- undervoltage monitor

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1 General Notes

Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, commissioning and disposal / recycling are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

2 Display and controls

The red LED indicates an alarm state.
This occurs if either at least one phase has failed, or if the total voltage is ≤50% of the nominal voltage.

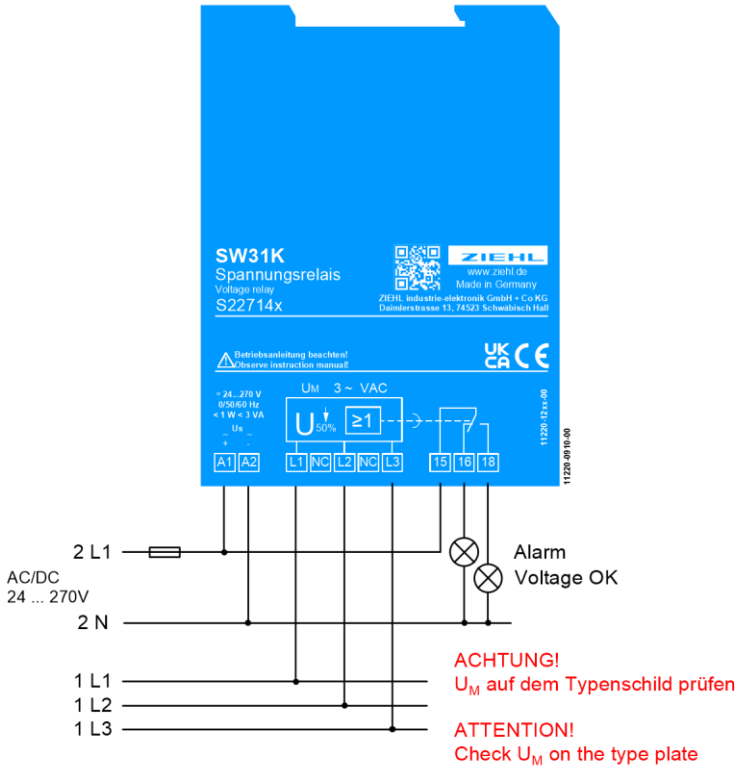
3 Application and short description

The undervoltage monitor SW31K monitors the voltage in 3-phase networks without a neutral conductor for undervoltage and voltage failure. The failure of a single phase or a symmetrical drip in voltage across all phases is detected. The switching threshold is factory preset to 50% of the monitoring voltage (Us). Switching back occurs with a hysteresis of approximately 10%. The relay switch-off delay is approximately 1 second. Other values can be configured at the factory upon request.

4 Overview of functions

- Voltage monitoring for undervoltage in 3-phase network without neutral
- Universal power supply AC/DC24…270V
- Switching point fixed at 50 % Us
- Response delay fixed
- Indication of switching status via LED
- 1 changeover contact in closed-circuit principal configuration
- Housing width: 22,5 mm (Type K)

5 Connecting diagram



6 Important Information

DANGER!
Hazardous voltage!
Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device.

Attention! Universal power supply
The device have a universal power supply, that is suitable for DC- and AC-voltages. Before connecting the device to supply-voltage make sure that the connected voltage corresponds with the voltage on the lateral type on the device

To use the equipment flawless and safe, transport and store properly, install and start professionally and operate as directed.
Only let persons work with the equipment who are familiar with installation, start and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instructions manual, the information which are written on the equipment and the relevant security instructions for the setting up and the use of electrical units.
The equipment is built according to DIN VDE/EN/IEC and checked and leave the plant according to security in perfect condition. If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.
In order to maintain this status, you must observe the safety regulations entitled “caution” in this operating manual. Failures to follow the safety regulations can result in death, personal injury or property damage to the device itself and to other devices and facilities.
To maintain this condition, you must observe the safety instructions in this instruction manual titled “Important Information”. Failure to follow the safety instructions may result in death, personal injury, or property damage to the equipment itself and other equipment and facilities.
Instead of the industrial norms and regulations written in this instruction manual valid for Europe, you must observe out of their geographical scope the valid and relevant regulations of the corresponding country.

7 Installation

The Device can be mounted:

- mount on 35 mm mounting rail according to EN 60715
- wall-mount with screws M4 (Additional bars not included)
- connecting wires refer to the connection plan to prevent miss-operation and malfunction.

A circuit-breaker or switch must be situated within easy reach of the unit and fused. Installation excess current protection should be ≤ 10 A.

8 Commissioning

Verifying proper device function:

- Switching on the mains voltage
- When the device is ready for operation, relay K1 must be energize (terminals 15 and 18 closed)
- Switch off one phase of the voltage being monitored. Relay K1 (alarm 1) must de-energize (terminal 15 and 16 closed).

  The red LED (Alarm) lights up.

9 Error search

Relay does not switch on

- Check whether the supply voltage is correctly applied to terminals A1 and A2 and matches the device voltage specified on the side nameplate.
- Check whether the measurement voltage is correctly connected to terminals L1, L2 and L3 and is >50% of the rated voltage.

10 Technical data

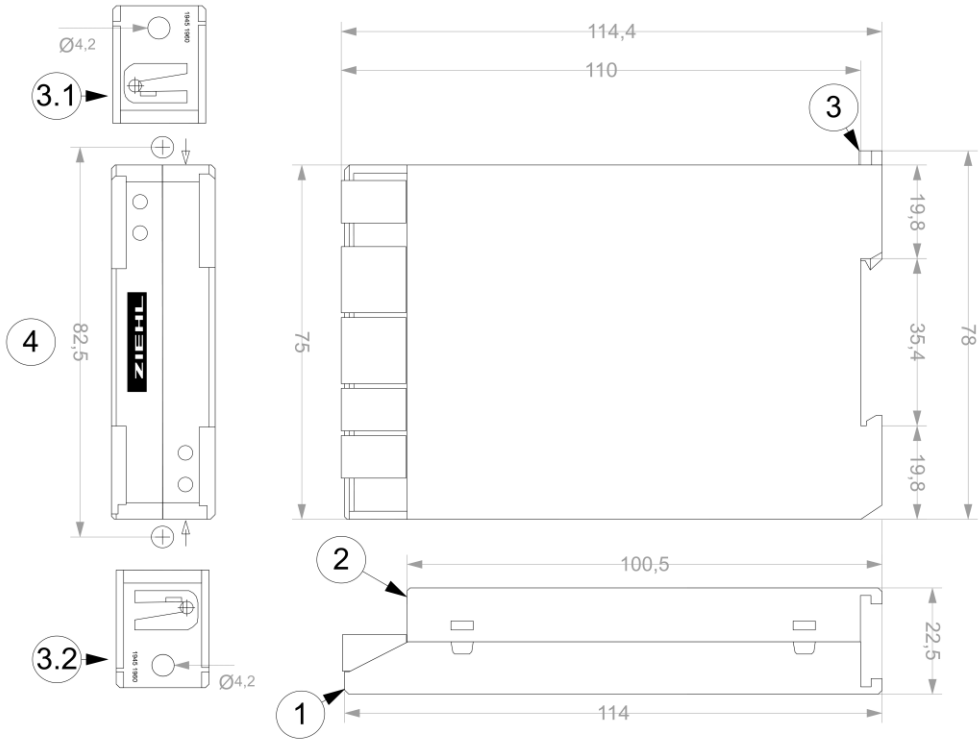
Rated supply voltage Us	AC/DC 24 – 270 V 0/50/60 Hz
Tolerance	AC 20 - 297 V / DC 20,4 - 297 V
Power consumption	< 3 VA, < 1 W
Output relay K1	change over contact
Switching voltage	max. AC 300 V; DC 300 V
Switch-on current (NO)	AC 15 A 4s 10% ED
min. voltage / current	12 V 10 mA
conventional thermal current Ith	max. 5 A
Switching power max. AC cos φ = 1	2000 VA
Switching power max. DC (ohm)	0.3 A 300 V; 0.4 A 120 V; 0.8 A 60 V; 8 A 30 V
Contact life electrical	cos φ = 1 -> 5 x 10^5 operating cycles 250 V / 2 A
Contact life mechanical	3 x 10^7 operating cycles
Recommended fuse NO	4 A time-lag or miniature circuit-breaker MCB B4
Recommended fuse NC	3,15 A time-lag
Utilization category Rated operational current	AC-15 Ie = 3 A Ue = 250 V DC-13 Ie = 2 A Ue = 24 V
Rated operational voltage	DC-13 Ie = 0.4 A Ue = 120 V; DC-13 Ie = 0.2 A Ue = 240 V
UL electrical ratings	250 Vac, 3 A, general use 240 Vac, 1/4 hp, 2.9 FLA 120 Vac, 1/10 hp, 3.0 FLA C300
Measurement voltage U_M	3AC 400V 50/60Hz 3AC690V 50/60Hz
Permissible tolerance	0,7 … 1,1 U_M
Nominal switch-off value	AC 170V AC 300V
Nominal switch-on value	AC 230V AC 400V
Tolerance	± 10%
Delayed switch-off response time	app. 1 s
Test conditions	IEC/EN 60255
Rated impulse voltage	4000 V
Overvoltage category	III
Pollution degree	2
Rated insulation voltage Ui	690 V
On-period	100 %
EMC-tests	EN 60255-26 industrial location
Emission	EN 60255-26; CISPR 11 class B
Immunity	EN 60255-26 industrial location
Electrical fast transient/Burst	EN 60255-26 ± 4 kV Pulse 5/50 ns, f = 5 kHz, t = 15 ms, T = 300 ms
SURGE immunity	EN 60255-26 ± 2 kV
Electrostatic discharge	EN 60255-26 ± 6 kV contact discharge, ± 8 kV air discharge

Reliability – failure rate	EN 61709/ SN29500		
Ambient conditions	Local operation in dry rooms		
Operation time 24/7/365	8760 h/y		
Failure rate (FIT)	Tu = 40 °C	Tu = 60°C	Tu = 80°C
Tu = Tref (component not in operation)	1056 FIT	2065 FIT	4282 FIT
	100 (108) years	55 years	26 years
Installation conditions			
Permissible ambient temperature	-20 °C … +55 °C		
Permissible storage temperature	-20 °C … +85 °C		
Installation height	< 2000 m over N.N.		
Climatic conditions	5-85% RH., no condensation		
Permissible wiring temperature	-5 °C … +70 °C		
Vibration resistance EN 60068-2-6	2 … 13,2 Hz ±1 mm	13,2 ... 100 Hz 1 g	
	2…25 Hz ±1,6 mm	25 ... 150 Hz 5 g	
Contact termination	Push-In spring-type terminal		
Protection class terminals	IP20		
Actuation type	Push-Button		
Number of levels	1		
Solid conductor	1 x 0.14 mm^2 … 1.5 mm^2 / AWG 28 … 16		
Fine-stranded conductor	1 x 0.14 mm^2 … 1.5 mm^2 / AWG 26 … 14		
Fine-stranded with insulated ferrule	1 x 0.25 mm^2 … 0.75 mm^2		
Fine-stranded with uninsulated ferrule	1 x 0.25 mm^2 … 1.5 mm^2		
Strip length	8 … 9 mm / 0.31 … 0.35 inches		
Housing	Type K		
Dimensions (W x H x D)	22.5 x 75 x 115 mm		
Width	1 DU		
Protection class housing	IP30		
IK-Code	IK06 (1 J impact energy)		
Mounting	Snap mounting on 35 mm standard rail EN60715 or M4 screws (additional bar not included)		
Mounting position	any		
Weight	app. 95 g		

Subject to technical changes

11 Housing Type K

Dimensions in mm



1 Bottom
2 Top
3 Bolt
4 Holes for screw mounting

12 Disposal

Disposal should be carried out properly and in an environmentally friendly manner in accordance with legal provisions.
ZIEHL is registered with the EAR Foundation under WEEE no.: DE 49 698 543.

13 Authorised representative

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